
* **KEY ISSUES: Correlative rights/fair share** *

* Existing wellbore doctrine *

* Waste *

* *

* **FINAL ORDER: PROTEST W/D - R37 GRANTED***

RULE 37 CASE NO. 0218731

APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR AN EXCEPTION TO STATEWIDE RULE 37 TO RE-COMPLETE WELL NO. 603, FORBES UNIT, FORBES (SAN ANDRES) FIELD, GARZA COUNTY, TEXAS.

OIL & GAS DOCKET NO. 8A-0219169

APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR AN EXCEPTION TO STATEWIDE RULE 10 FOR ITS FORBES UNIT WELL NO. 603 IN THE FORBES (GLORIETA) AND FORBES (SAN ANDRES) FIELDS, GARZA COUNTY, TEXAS.

APPEARANCES:

FOR APPLICANT:

Philip Patman, Atty.
Suzanne Vaught
C. M. Stephens, Jr.
Richard A. Erickson

APPLICANT:

Anadarko Petroleum Corporation
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FOR PROTESTANT:

Kerry Pollard

PROTESTANT:

Stelzer Drilling

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

APPLICATIONS FILED:

February 20, 1998

NOTICE OF HEARING:

April 20, 1998

DATE OF CONSOLIDATED HEARINGS:

May 15, 1998

HEARD BY:

Marshall Enquist, Hearings Examiner
Margaret Allen, Technical Examiner

TRANSCRIPT DATE:

June 20, 1998

PFD CIRCULATION DATE:

August 26, 1998

STATEMENT OF THE CASE

Anadarko Petroleum Corporation ("Anadarko") seeks an exception to Statewide Rule 10 to downhole-commingle production from the Forbes (Glorieta) Field with production from the Forbes (San Andres) Field in its Forbes Unit Well No. 603 ("Well No. 603" or "subject well"). The field rules for the Forbes (Glorieta) Field allow wells to be drilled 330 feet from the nearest lease line and 660 feet from existing wells on optional twenty acre units. The Forbes (San Andres) Field is on Statewide Rules which require spacing of 467 feet to the nearest lease line, between-well spacing of 1200 feet and forty acre units. Well No. 603 (see Attachment I) is 330 feet from the protestant's lease line, which is a regular location in the Forbes (Glorieta) Field, and the well is already producing from that field. The subject well will need a Rule 37 exception before it can be completed in the Forbes (San Andres) Field. The application is protested by Stelzer Drilling Company ("Stelzer") which operates the offsetting lease to the south of Well No. 603.

DISCUSSION OF THE EVIDENCE**APPLICANT'S EVIDENCE**

The Forbes (Glorieta) Field was discovered in 1955 and most of the wells in the field were drilled in the 1950's and 1960's. Anadarko became involved in the field in 1991 and thus Anadarko's experience with drilling wells in the field is limited. This field is being waterflooded and Anadarko has been reviewing the waterflood effectiveness for the last few years. Anadarko's geologist recommended new Glorieta wells be drilled on the eastern flank of the field in Section 1.

Well No. 603 was drilled in late 1997 and put on production in the Glorieta during December. The well was intended to help the ongoing secondary recovery operations in the Glorieta and Anadarko's geologist testified that he was not concerned with a San Andres target at the time. However, when Well No. 603 was being drilled to the Glorieta, Anadarko did notice a better mudlog hydrocarbon show than it expected while drilling through the San Andres. According to Anadarko's geologist, Well No. 603 was located 330 feet north of the south lease line because that complied with the field rules for the Glorieta and because Anadarko was trying to extend the waterflood as close to the edges of the unit as possible.

Anadarko was disappointed with the results of the Glorieta completion in its Well No. 603. Before the well was drilled, Anadarko estimated the primary reserves available at its location to be 35,000 barrels and that ultimate primary and secondary recovery would be 80,000 to 85,000 barrels. Anadarko now predicts this well will recover only 40,000 barrels from the Glorieta and that it will take more than 30 years to do so. During Well No. 603's first five months of production it pumped an average of less than 6 BOPD and 44 BWPD.

Anadarko has now decided that Well No. 603 would be a good candidate for a Rule 10 exception. The perforations in the Glorieta in Well No. 603 are from 3672 feet to 3685 feet, while the proposed perforations in the San Andres would be from 3080 feet to 3250 feet. The San Andres dolomite is productive in shallowing-upward cycles which were deposited on or near the Middle Permian shelf edge. The San Andres structure map shows a small northwest-trending anticline with

Well No. 603 a little higher structurally than surrounding wells. Many of the wells on the Forbes Unit have poor records and old logs, making geologic interpretation difficult. Anadarko has not defined a San Andres model yet nor determined where the San Andres will be most productive. Therefore, statistical analysis was used to determine the reserves that might be expected from the San Andres in Well No. 603.

Anadarko's predicted ultimate recovery from eleven wells with sufficient production history from the San Andres alone (i.e. non-commingled production) was highly variable, ranging from 1,000 barrels to 59,000 barrels per well. The average ultimate production is expected to be 40,000 barrels per well. The protestant reports San Andres production from its wells, the R.D. Cole Well Nos. 2 and 3, on a lease basis and therefore Anadarko could not estimate separate ultimate production for these two wells. The two wells together have an expected ultimate recovery of 200,000 barrels, according to Anadarko.

Anadarko asserts that it cannot drill a new well at a regular location to recover the 40,000 barrels of oil predicted to be recoverable from the San Andres. A new well would cost \$212,400 and would never pay out, according to Anadarko. A re-completion which added perforations in the San Andres to the existing Glorieta production in Well No. 603 would cost \$45,200 and pay out, after taxes, in just over three years. Anadarko submitted the production curves of two downhole-commingled wells on the Forbes Unit to show that adding perforations in the San Andres to existing Glorieta production will cause an increase in production.

There are seven wells on the Forbes Unit that are downhole-commingled in the Glorieta and San Andres (plus one injection well serving both fields). About 1100 feet northeast of Well No. 603 is the Anadarko Forbes Unit Well No. 602, which produces from only the San Andres. This well had an initial potential of 40 BOPD in October of 1985, and has produced 20,500 barrels. Because the log of Well No. 602 is not as good as the recent log of Well No. 603, Anadarko used the log of No. 603 to determine the average properties of the San Andres reservoir. Anadarko assumed the average porosity in Well No. 602 to be 14%, the water saturation to be 54% and the net pay was calculated to be 20 feet, based on a porosity cutoff of 11%. Anadarko thus calculated the drainage radius of Well No. 602 to date to be 475 feet. If this well eventually produces 40,000 barrels of oil, its drainage radius will be only 660 feet and the area drained will not come close to the location of Well No. 603.

The protestant's well, the R.D. Cole No. 2, is 975 feet southwest of the Forbes Unit No. 603. This well had an initial potential of 35 BOPD in November of 1981 and Anadarko assumed that it has produced 24,600 barrels of oil to date, based on the initial potential and length of time on production. Using the reservoir properties determined from Well No. 603, the radius of drainage around the Cole No. 2 to date was calculated by Anadarko to be 520 feet. This radius describes a circle which includes Anadarko acreage. Further production by this well will drain additional oil from the Forbes Unit according to Anadarko. Producing oil from the San Andres in Well No. 603 would mitigate future drainage of the Forbes Unit by Stelzer's Cole No. 2 according to Anadarko.

Even if the protestant's R.D. Cole No. 2 produces 100,000 barrels of oil, and the drainage radius reaches 1050 feet, Anadarko asserts that there would still be unrecovered San Andres reserves

on the Forbes Unit though they would be north of Well No. 603. Thus, Anadarko contends that Well No. 603 is needed to prevent waste in the San Andres even if the Cole No. 2 has exceptionally good ultimate recovery.

Anadarko pointed out that Stelzer's R.D. Cole No. 2 was not drilled at 467 feet from the Forbes Unit but appears to be only 330 feet from the north and west lease lines. If Anadarko were to drill a well at a regular location on the Forbes Unit for the San Andres alone, it could be as close as 797 feet directly north of the R.D. Cole No. 2. As Anadarko's Well No. 603 is 925 feet to the northeast of the R.D. Cole No. 2, Anadarko points out that a re-completion in that well would have less direct effect on the R.D. Cole No. 2 than a new well at a regular location in the San Andres directly to the north.

PROTESTANT'S EVIDENCE

The protestant's position is that Anadarko could have drilled its Well No. 603 at a regular location in both the Forbes (Glorieta) and Forbes (San Andres) Fields in 1997. According to Stelzer, Anadarko's actions in drilling at 330 feet for the Glorieta and then claiming a Rule 37 exception is necessary to complete economically in the San Andres is a subterfuge to avoid having to comply with the Forbes (San Andres) Field rules. Stelzer notes that the San Andres field rules were in effect long before Anadarko drilled Well No. 603. The Forbes (San Andres) Field was discovered in 1959 and is under Statewide Rules, while Well No. 603 was drilled in 1997.

Protestant points out that Anadarko's map (see Attachment I) does not include the location of Well No. 604, which was permitted on July 1, 1997 for the Glorieta but has not been drilled, possibly pending the outcome of this hearing. Well No. 604 is permitted for a location approximately 1200 feet east of Well No. 603, 330 feet off the Stelzer lease line.

According to Stelzer, Anadarko's geologists should have been familiar with the number of San Andres wells and the number of downhole-commingled wells in the San Andres and Glorieta on the Forbes Unit. Even if the Glorieta was the primary target, Anadarko should have been aware that the San Andres was a secondary target.

Anadarko's Exhibit 2 shows that there are at least two wells producing only from the San Andres and eight combined San Andres and Glorieta wells in this part of the Forbes Unit. Stelzer pointed out that Anadarko's map showed its Forbes Unit No. 601 to be completed in the San Andres (as well as in the Glorieta), yet Anadarko did not consider San Andres production from this well. Forbes Unit Well No. 601 is about as close to the subject well as Forbes Unit Well No. 602, yet Anadarko's drainage map did not indicate any drainage in the San Andres by Well No. 601. Commission records on this well appear to be incomplete but if this well has produced a large amount from the San Andres, it could have drained Section 1 as much or more than Well No. 602. Any of Anadarko's calculations about drainage are therefore flawed according to Stelzer.

Stelzer also pointed out that Anadarko's Forbes Unit Well No. 1602 is about 330 feet west of Stelzer's Cole Lease and 660 feet west of the R.D. Cole No. 2. This well already has a Rule 37 exception permitting completion in the San Andres and a Rule 10 exception permit. Well No. 1602

was completed in 1960 and Anadarko's maps show this well is producing only the Glorieta. If this well were perforated in the San Andres it would certainly decrease the possible drainage of the Forbes Unit by Stelzer's R.D. Cole No. 2.

EXAMINERS' OPINION

Exceptions to Statewide Rule 37 may be granted to prevent waste or to protect correlative rights/prevent confiscation. The applicant presented its case for a SWR 37 exception in the Forbes (San Andres) Field based on confiscation and prevention of waste.

To obtain an exception to Statewide Rule 37 to protect correlative rights, the applicant must show: 1) that it is not possible for the applicant to recover its fair share by placing the well at any regular location; and 2) that the proposed irregular location is reasonable.

Anadarko did not estimate its fair share of reserves in the San Andres under the Forbes Unit. Nor did Anadarko estimate the total San Andres oil its existing Forbes Unit wells will recover. Without evidence of its fair share of San Andres reserves from the Forbes Unit, Anadarko cannot show that the existing and possible future completions at regular locations in the San Andres will not recover that fair share.

Anadarko's exhibits do not cover all of the Forbes Unit. However, Anadarko's Exhibit 2 does show that there are large areas of the unit where no wells have yet been completed in the San Andres. Anadarko has not re-completed all of its wells at regular locations in the San Andres nor even considered in its calculations the recovery in the San Andres from all of its existing completions. Anadarko already has a permit to produce the San Andres in its Forbes Unit Well No. 1602 (approved by the Commission October 2, 1996), just to the west of the Stelzer Cole Lease. If Anadarko is concerned that there is ongoing drainage from the Stelzer Cole Well No. 2 in the San Andres Formation, it could produce from the San Andres in its Well No. 1602 before seeking a Rule 37 exception in Well No. 603.

Part of Anadarko's argument is that a re-completion in Well No. 603 would be farther away from the Cole No. 2, and have less effect on it, than a regular completion directly north of the Cole No. 2. Although this may be true, it doesn't mean the well is necessary to protect correlative rights or prevent waste. Also, the Commission's field rules are concerned only with lease line spacing and between-well spacing. Thus, Anadarko's argument that it would be less harmful to the protestant to grant the Rule 37 exception than for Anadarko to drill a new well is irrelevant.

Anadarko has not proved its case for a Rule 37 exception location based on confiscation for its Well No. 603 because it has failed to provide any estimate of its fair share of the reserves in the San Andres under the Forbes Unit, and because it has not shown that the Rule 37 exception location is reasonable.

An applicant seeking an exception based on waste must establish three elements: 1.) unusual conditions, different from conditions in adjacent parts of the field, exist under the tract for which the exception is sought; 2.) as a result of the unusual conditions, hydrocarbons will be recovered by the

well for which the permit is sought that would not have been recovered by any existing well or by additional wells drilled at regular locations; and 3.) that the volume of otherwise unrecoverable reserves is substantial.

Anadarko has argued that it cannot drill a new well at a regular location that will economically recover the existing reserves north of Well No. 603 and must use the existing wellbore to prevent waste. An existing wellbore can qualify as an unusual condition under the Existing Wellbore Doctrine, as created in Exxon Corp. v. Railroad Commission, 571 S.W.2d 497, 501 (Tex. 1978). However, at the same time the Texas Supreme Court created this doctrine, it considered the possibility that allowing an existing wellbore to qualify as an unusual condition could lead to abuses; specifically, encouraging operators to drill to deeper formations with lesser lease line spacing requirements in order to disregard more restrictive spacing requirements in the intervening formations.

We conclude that an appropriate test is whether the existing well was drilled and completed in the original formation legitimately and in good faith, and not as a subterfuge to bolster a later Rule 37 exception....Should a case arise in which there is a suggestion that a well has been drilled as a subterfuge to bolster a later Rule 37 application, the Commission, upon finding such a subterfuge, may properly refuse to consider the existing well bore as a factor in granting the Rule 37 exception.

Id., 501. In this case, testimony reveals that Well No. 603 was originally applied for at a location regular in both fields (Tr. pp. 59-60), but that application was withdrawn. The present regular location of the subject well in the Glorieta, 330 feet from the lease line, was then applied-for, granted and drilled. Well No. 603 was tested and placed on production on December 15, 1997 and only two months later, on February 20, 1998, Anadarko filed the instant application requesting a Rule 37 exception and permission to commingle. The fact that the initial application for Well No. 603 was originally applied-for as regular in both the Glorieta and San Andres Fields, but was withdrawn, coupled with the timing of the present application, raises a question as to whether the well was "...drilled as a subterfuge to bolster a later Rule 37 application....".

In the Exxon case, the exception requested involved between-well spacing. The subject well in that case was 7,000 feet from the protestant's well, and 773 feet from the nearest lease line, comfortably beyond the 467 feet required by the Statewide Rules. In that case, the protestant could suffer little harm from the grant of the Rule 37 exception.

In the present case, a grant of a Rule 37 exception for the Anadarko Forbes No. 603 would allow a completion 330 feet from the protestant's lease line, much closer than the 467 feet required under the field rules, thus potentially draining the offset tract and harming protestant's correlative rights. As an additional consideration, if the Rule 37 exception for Well No. 603 were to be granted, Anadarko would have precedent to drill its already permitted Well No. 604 330 feet off the protestant's lease line and then request an identical Rule 37 exception for that well.

Anadarko was aware of the lease line spacing rule for San Andres wells, or should have been,

before it drilled its Well No. 603 in 1997. The fact that Well No. 603 already exists does not entitle Anadarko to ignore the field rules for the San Andres.

Even if Anadarko is given the benefit of the doubt as to whether the existing wellbore constitutes an unusual condition, Anadarko still cannot prove waste. Anadarko has not shown that the well for which the permit is sought will recover hydrocarbons that could not be recovered by existing wells or additional wells drilled at regular locations, nor can it show that the volume of otherwise unrecoverable reserves is substantial.

In the absence of more complete well log data, Anadarko has averaged the estimated ultimate recoveries of selected wells. Anadarko arrived at an estimated ultimate recovery of 40,000 BO per well after averaging 13 wells producing in the San Andres. On its Exhibit No. 10, Anadarko uses a gray dashed line to represent the circumference of the area drained if the Anadarko Well No. 602 and the Stelzer Cole No. 2 each produce an average recovery of 40,000 BO. Anadarko has noted in its testimony that the Stelzer Cole Nos. 2 and 3 have an estimated ultimate recovery of 200,000 BO and that, if that recovery is divided evenly between the two Stelzer wells, the Stelzer Cole No. 2 may ultimately drain a radius of 1,050 feet, placing the NE edge of its drainage area to the NE of the Anadarko No. 603 (see Attachment II). Anadarko asserts that the interval between the most optimistic drainage radius of the Cole No. 2 and the 40,000 BO recovery radius (675 feet) of the Anadarko No. 602 is the zone of oil that cannot be recovered by any existing well and will be wasted.

However, Anadarko's reliance on average recoveries obscures the effect of well recoveries that fall outside the averages. Using Anadarko's own figures, it is apparent that the Stelzer Cole No. 2 has had a cumulative production of 24,600 BO over a period of 17 years, for an average recovery of 1,440 BO per year, while the Anadarko No. 602 has had a cumulative production of 20,500 BO per year over 13 years, for an average annual recovery of 1,570 BO per year. Clearly, production from the Anadarko No. 602 is roughly equivalent to or slightly better than production from the Cole No. 2. If the Stelzer Cole No. 2 can be expected to ultimately produce over 100,000 BBO, it is not unreasonable to expect that the Anadarko No. 602 might do equally well. If the Anadarko No. 602 also ultimately produces 100,000 BBO and if its drainage radius is also 1,050 feet, which are reasonable inferences from Anadarko's data, then the drainage area of the two wells overlap (see Attachment III) and there is no oil north of the Anadarko No. 603 that is unrecoverable or wasted.

Furthermore, if Anadarko re-permits and drills its Well No. 604 at a location regular in both fields, only a small area will not be covered by the possible 1,050 foot drainage radii of the Anadarko No. 602, the Stelzer Cole No. 2 and the smaller 40,000 BO recovery radius of the Anadarko No. 604. In addition, the Stelzer Cole No. 4 is a regular distance from the lease line for the San Andres and could be re-completed in that field. Assuming a 40,000 barrel recovery for this well, only a thin sliver of reservoir on the Anadarko Lease will not be drained by existing wells, re-completed existing wells or future wells drilled at regular locations. Regardless of whether the oil east of the Anadarko No. 603 is recovered by Anadarko or captured by Stelzer, it would not be wasted.

Anadarko's application for a Rule 10 exception for its Well No. 603 to downhole-commingle the Glorieta and San Andres production in its Well No. 603 is made moot by the fact that Anadarko should not be granted an exception permit to produce from the Forbes (San Andres) Field.

FINDINGS OF FACT

1. Notice of hearing was given on April 20, 1998 to all designated operators, lessees of record for tracts that have no designated operator, and owners of record of unleased mineral interests for each adjacent tract and each tract nearer to the well than the prescribed minimum lease-line spacing distance.
2. All things necessary to the Commission attaining jurisdiction over the subject matter and the parties in this hearing have been performed or have occurred.
3. The applicant, Anadarko Petroleum Corporation ("Anadarko"), seeks an exception to Statewide Rule 37 to complete Well No. 603 on the Forbes Unit in the Forbes (San Andres) Field. Anadarko has a regular permit for its existing Well No. 603 in the Forbes (Glorieta) Field.
4. Anadarko's Well No. 603 is located 330 feet FSL and 2650 feet FEL of the unit, and 330 feet FSL of Section 1 and 980 feet FWL of Section 1. Section 1 is located in Block 1 of the K. Aycock Survey, A-800.
5. Anadarko's Forbes Unit is a tract of regular size and shape, containing 2,260 acres.
6. The protestant, Stelzer Drilling Company ("Stelzer") owns the R.D. Cole Unit south of Well No. 603 and south and east of the Forbes Unit. There are two wells on the Cole Lease producing from the Forbes (San Andres) Field.
7. The Forbes (San Andres) Field was discovered in 1959 and is on Statewide Rules which require wells to be 467 feet from lease lines.
8. The Anadarko Forbes Unit Well No. 603 was drilled in 1997, and placed on production in December, 1997.
9. On February 20, 1998, Anadarko requested a Rule 37 exception to complete its Well No. 603 in the Forbes (San Andres) Field to prevent waste and confiscation.
10. Anadarko made no estimate of the amount of currently recoverable reserves in the San Andres under its Forbes Unit and therefore made no estimate of its fair share.
11. Anadarko did not estimate how much all of its existing San Andres wells would recover and there are numerous regular locations on the Forbes Unit that could be completed in the San Andres.

12. Anadarko did not show any unusual condition at the location of its Well No. 603 other than the fact that the well already exists 330 feet from the nearest lease line.
13. Well No. 603 was originally applied-for at a location regular in both the Forbes (Glorieta) Field and the Forbes (San Andres) Field. That application was later withdrawn.
14. Well No. 603 was applied-for at a location 330 feet from the protestant's lease line, a location regular in the Forbes (Glorieta) Field. The well was subsequently drilled at that location and was later placed on production on December 15, 1997.
15. Anadarko filed the present Rule 37 request for an exception to re-complete in the Forbes (San Andres) Field, which requires lease line spacing of 467 feet, on February 20, 1998.
16. The changes in the applied-for location of Well No. 603, considered in combination with the timing of the filing of the present application, suggest that Well No. 603 was drilled as a subterfuge to bolster the present application for a Rule 37 exception.
17. Anadarko has not yet completed its Forbes Unit Well No. 1602 in the San Andres even though that well is only 660 feet from the Stelzer Cole No. 2 and has a Rule 37 exception permit to do so.
18. Hydrocarbons that would be recovered by the well for which the permit is sought, the Anadarko Well No. 603, can be recovered by existing wells or by additional wells drilled at regular locations.

CONCLUSIONS OF LAW

1. Proper notice was timely given to all parties legally entitled to notice.
2. The application on Form W-1 was properly filed.
3. All things have occurred and have been done to give the Commission jurisdiction to decide this matter.
4. A SWR 37 exception is required to complete the Forbes Unit Well No. 603 in the Forbes (San Andres) Field at the existing location.
5. Anadarko is not entitled to a SWR 37 lease line spacing exception for the Forbes (San Andres) Field to prevent waste or protect correlative rights.
6. Anadarko is not entitled to a SWR 10 exception for its Forbes Unit Well No. 603. in the Forbes (Glorieta) and Forbes (San Andres) Fields, in Garza County, Texas.

RECOMMENDATION

The examiners recommend that Applicant's request for an exception to Statewide Rule 37 for its Forbes Unit, Well No. 603, in the Forbes (San Andres) Field, Garza County, Texas, be denied. As the subject well cannot be perforated in the Forbes (San Andres) Field if the Rule 37 exception is denied, the examiners also recommend that the application for a Rule 10 exception to downhole-commingle Well No. 603 in the Forbes (Glorieta) and Forbes (San Andres) Fields be denied.

Respectfully submitted,

Marshall F. Enquist
Hearings Examiner

Margaret Allen
Technical Examiner